



**LOUDOUN COUNTY, VA
TECHNICAL REVIEW**

**PROPOSED
NEW
150-FOOT MONOPOLE
by
COMMUNITY WIRELESS STRUCTURES
(CWS)**

CWS SITE # 114 – Round Hill

CMPT 2007-0009

SPEX 2007-0016

Submitted by:

ATLANTIC TECHNOLOGY CONSULTANTS, INC.

A Member of The Atlantic Group of Companies

ATC PROJECT #: 1025-10

November 2, 2007



THE ATLANTIC GROUP
OF COMPANIES INC.

EXECUTIVE SUMMARY:

Community Wireless Structures IV, LLC (“CWS”) of Falls Church, Virginia, has submitted an application to Loudoun County requesting a Special Exception and Commission Permit to construct 150-foot monopole on property owned by Everett and Mary E. Fletcher located on the southwest side of Bell Road (Route 720), approximately 0.2 mile northwest of Paloma Circle, at 36055 Bell Road, Round Hill, Virginia.

CWS is a tower developer for wireless infrastructure and offers co-location opportunities for eligible wireless carriers such as cellular, PCS, paging, and backhaul providers. CWS has submitted a letter of interest from T-Mobile, Fibertower Corporation (“Fibertower”), and Mobile Satellite Ventures (“MSV”). T-Mobile is a FCC licensed telecommunications provider authorized and mandated to provide wireless communications services to the Loudoun County area. Fibertower is a wireless backhaul provider currently doing a network design in Loudoun County. MSV is currently designing a network for the Washington DC market in preparation for offering a new wireless service. The Applicant is proposing the construction of a new 150-foot monopole to support service delivery in an area of verifiable lack of coverage in and surrounding the Town of Round Hill.

This report outlines the specific areas of evaluation with respect to this proposal, and this consultant’s recommendations regarding the Application package as presented. Supporting and clarifying evidence regarding the suitability of the proposed design in meeting the specified coverage goals is also included.

In general, it is the opinion of this consultant that this application should be denied based on setback issues. See Section 1.1 “Setbacks” and Section 3.0 “Recommendations” of this document for further details.

George N. Condyles IV

George N. Condyles, IV
President and COO
Atlantic Technology Consultants, Inc.

1.0 TECHNICAL:

1.1 Siting

The proposed tower site is a 45' x 100' fenced compound on approximately 4,500 square foot portion of an 9.32 acre parent parcel. The property is zoned AR-1 (Agricultural Rural-1) and located on Tax Map 34 ((88)) (Pin# 554-17-2877). The proposed site can be accessed from Evening Star Drive approximately one half mile north of Harry Byrd Highway (Route 7) and is physically located at coordinates N 39° 08' 37" and W 77° 45' 34.4" at a ground elevation of 567.692-feet. The proposed tower is located approximately 400-feet from the Round Hill Water Tank to the southeast on the adjacent property.

CWS has obtained and submitted a Deed of Easement dated July 24, 2007 with the Round Hill Homeowners Association allowing access from the west side of the Fletcher property. The Round Hill Homeowners Association property can be found on Tax Map 34 ((30)), Parcel 1 (PIN# 554-16-4345). CWS has obtained a 24' easement and proposes a 12' wide gravel access drive extending from the Round Hill Water Tank access driveway to the proposed CWS tower site. The Round Hill Water Tank address is 17144 Evening Star Drive.

The Applicant is proposing to construct one (1) 150-foot monopole with a 6' lightning rod, which can accommodate up to six (6) co-locators. The site compound could accommodate approximately 6 shelters or cabinets.

Setback:

The tower complies with the County's current setback requirement that "...towers shall be set back one (1) foot for every five (5) feet in height from the property line." [Loudoun County 1993 Zoning Ordinance, Section 5-618 (C) (3) (e)] In other words, it is a 20% setback requirement. The Site Plan submitted with this Application shows the proposed 150-foot monopole setback from the nearest property line is approximately 50-feet, which is 33% of the height of the tower and less than the 110% setback recommended by ATC.

The nearest occupied dwelling to the monopole is approximately 400', which does not meet the recommended ATC setback of 750'.

Upon reviewing the site plans, it does not appear that the proposed tower site could be moved to meet either of the setback requirements as recommended by ATC.

RSR Lawn and Landscaping is located to the east of the proposed site.

Geotechnical:

Not required

Landscape Buffer:

There are trees 40' to 90' to the south of the proposed site.

According to the County Staff Report for the Planning Commission Public Hearing dated October 15, 2007 on page 7, "IV. Conditions of Approval- September 26, 2007", Item # 5:

"The applicant shall utilize existing mature vegetation surrounding the equipment compound to create a 150-foot radius Tree Save Area (TSA) as depicted on the Special Exception Plat. Within the TSA, the forest shall be allowed to naturally develop, and no logging, cutting or harvesting of trees shall occur. However, the applicant and property owner reserves the right to remove, in consultation with the County Urban Forester, any dead, damaged, dying or diseased trees and invasive vegetation in the TSA."

Co-Location:

Co-location is preferable to construction of a new site, with such co-location minimizing visual impact of telecommunications equipment on the surrounding area. The nearest potential co-location structure is the 145-foot Round Hill Water Tank located approximately 400-feet to the northwest of the proposed 150-foot monopole. Verizon Wireless has a pending application to co-locate on the water tank and a structural analysis has been performed to determine the number of potential co-locations the water tank can accommodate. According to the structural analysis the water tank can structurally accommodate a total of four (4) co-locations, however any co-locations beyond two (2) would encounter logistical issues that could result in potential structural damage and visual impact issues. See ATC's Technical Review of Verizon's co-location application, Project # 1025-11 for further details.

The proposed CWS tower site location is a lower ground elevation (568') than the existing Round Hill Water Tank location (591') thus making the overall height 23' higher in AGL.

In addition, CWS identified two other existing structures potentially over 50-feet within the two-mile radius. The two identified structures are silos located at 36252 Bell Road and 36278 Bell Road. According to CWS, "...there are a few issues preventing these structures from being suitable for collocation purposed:

- The close proximity of the silos to property lines precludes the structures from meeting the County required setbacks.
- The silos do not have the height necessary to facilitate signal propagation given the existing topography and vegetation in the area.
- The silos are located on open lots with little to no existing tree cover, which the County requires to provide screening for telecommunications facilities.

The next closest existing potential co-location structure already supporting one co-location, Cellular One, is the Purcellville Water Tank located approximately 4 miles east of the Round Hill Water Tank.

CWS has designed the proposed monopole to accommodate up to six (6) co-locations. As previously mentioned, they have submitted Letters of Interest from T-Mobile, Fibertower, and MSV. In addition, Cingular and Sprint Nextel, at one time, were interested in co-location on the water tank, however it appears that discussions ceased.

The Water Tank at Round Hill can accommodate 2 on the crown of the tower and 2 additional carriers on the belly.

1.2 Structural

The proposed 150-foot monopole-style tower design shall consist of high strength steel and shall be in full compliance of the EIA/TIA-222-F guidelines (the accepted industry standard) for structures, which is mandated to withstand the structural loading of all appurtenances, plus additional wind and ice loading.

Structural drawings of the monopole signed/sealed by a Professional Engineer licensed in the Commonwealth of Virginia demonstrating the tower's ability to structurally accommodate the antennae and associated appurtenances of six (6) co-locations, while complying with all applicable construction and loading standards, guidelines, and codes has NOT been submitted with the Application.

Furthermore, in conformance with County ordinance, work at this site will remain in compliance with ALL federal, state, and local building codes and regulations if work proceeds as outlined in the application.

1.3 RF Exposure

FCC bulletin OET-65 provides guidance for a licensee proposing to construct a telecommunications support structure in calculation of RF exposure limitations, including analysis of the cumulative effect of all transmitters on the structure.

Appropriate steps, including warning signage at the site, must be taken to protect both the general public and site workers from unsafe RF exposure in accordance with federal guidelines.

Documentation of an RF exposure study is NOT included with this application; therefore it is assumed that this study has not been performed. Although this Consultant sees no evidence of unsafe RF exposure levels being generated at this site if co-location were to proceed as proposed, a certified RF Analysis Report is recommended.

RF site exposure warning signage placement shall be appropriately planned for this site.

1.4 Grounding

Grounding of all structures and equipment at an RF site is critically important to the safety of both personnel and equipment at the site. Even a single component not meeting this standard places all other site components at risk for substantial damage. All structures and equipment at the site should maintain a ground potential difference of less than 5 ohms.

A grounding plan was not submitted with this Application.

1.5 General Safety

The 45 'x 100' site compound will be surrounded by suitable 7' security fence with 1' of barbed wire to prevent unauthorized access to the tower.

Additional safety measures to be placed at this site include RF exposure warning signage, site identification information, and routine and emergency contact information and FCC Registration number.

The Permit Plans should include the installation of an OSHA-approved style of fall prevention cable.

1.6 Interference

An interference study, taking into account all proximally located transmitters and receivers known to be active in the area, is advisable prior to any new tower construction. A full interference study has not been included with the Applicant's design, and therefore it is assumed that such a study has not been performed.

While it remains technically prudent and advisable to complete this study for any new tower construction, practically speaking this consultant sees no evidence of

interference by or with this site after a general evaluation of the surrounding transmitter sites.

Should any interference issues be posed with respect to this site, mitigation would nevertheless remain the responsibility of the tower owner and affected carrier(s), and would be regulated by the Federal Communication Commission, having no effect or burden on the County.

2.0 PROCEDURAL

2.1 FAA Study

An initial search was performed by this consultant via TOWAIR Determination under the ASR online system on the FCC website to determine if registration is required. The TOWAIR determination results were as follows:

“Structure does not require registration. There are no airports within 8 kilometers (5 miles) of the coordinates you provided.”

2.2 FCC Antenna Site Registration

This site does not yet have, nor is it required to have, an antenna site registration number. For both routine and emergency identification purposes, however, it is recommended that this site be registered with the Federal Communication Commission. All registered sites should have their registration number conspicuously displayed at the site which is normally on the security fence surrounding the compound area.

2.3 Environmental Impacts

The National Environmental Policy Act of 1969 (NEPA), delineated in Title 47 of the Code of Federal Regulations, Part 1, Subpart I, sections 1.1301-1.1319, requires federal agencies to incorporate environmental considerations into their decision-making process when evaluating new construction proposals. As a licensing agency, the Federal Communication Commission (FCC) requires all licensees to consider the potential environmental effects from their construction of antenna support structures, and to disclose those effects in an Environmental Assessment (EA) that must be filed with the FCC for review.

A NEPA Phase I Evaluation dated April 15, 2007 and prepared by Baxter Consultants, Inc. has been submitted with the Application that indicates NO IMPACT. Upon review of correspondence with consulting agencies, this Consultant did not note any references indicating an impact.

A NEPA Phase I Report should include the following items:

- NEPA Checklist
- NEPA Summary Report
- Associated documentation
 - Figures, Drawings, Maps
 - Tribal Correspondence
 - Land Resources Map and FEMA Floodplain Map
 - SHPO Correspondence (See next Section 2.4 “Historic Impacts)
 - Department of Game and Inland Fisheries Response
 - Department of Conservation and Recreation Response

The NEPA Phase I Assessment is a report that is submitted to the FCC only if requested by the FCC. Otherwise, it shall be reviewed by the appropriate locality for which the proposed tower site is being considered for approval.

2.4 Historic Impacts

Section 106 of the National Historic Preservation Act of 1966 (NHPA) requires that State Historic Preservation Offices (SHPO) and the President’s Advisory Council on Historic Preservation be given a reasonable opportunity to comment on all undertakings with the potential to affect historic properties. The licensee is required to submit to the SHPO a detailed description of the project, a listing of local historic resources, and a discussion of any measures being undertaken to mitigate impacts (if any) on historic resources. Upon receipt, the SHPO has thirty (30) days to review and respond to those submissions. All agencies with authority to permit construction are required to consider the SHPO response in its decision making process with respect to new construction applications.

A Cultural Resource Survey, dated November 2006, was prepared by Dovetail Cultural Resource Group, LLC (Dovetail) to evaluate potential impacts to historic resources, both architectural and archaeological, and was submitted with the Application. In addition, a copy of the New Tower Submission Packet submitted to SHPO for Section 106 review was included with the Application.

According to a response letter from the Virginia Department of Historic Resources (VDHR), dated October 17, 2007:

“As there are no historic properties eligible for or listed on the National Register of Historic Places and the Virginia Landmarks Registers, it is our opinion that there will be no historic properties affected by this project.”

Note: There are some old stone walled streets near the proposed site.

2.5 Supporting Documentation

CWS did include T-Mobile coverage maps supporting the co-location of their antennas on CWS' proposed 150-foot monopole.

An independent RF analysis has been performed by this consultant, with a coverage map appended to this report, verifying that the applicant will be able to meet their stated coverage objectives to provide the wireless coverage necessary to alleviate the lack of coverage encountered in this area.

Supporting documentation in the form of photo simulation was submitted with the Application. This Consultant believes the photo-sims are an accurate representation of proposed monopole from various locations surrounding the proposed site. Both the Round Hill Water Tank and the proposed monopole will be seen by neighbors.

2.6 Logistical Issues for the Round Hill Water Tank

Due to setback restrictions on the proposed 150-foot monopole, this Consultant believes co-location on the Round Hill Water Tank is a more viable solution. However, there are some logistical issues associated with the Water Tank as follows:

- Setback – Each time there is a request that proposes increasing the height of the water tower structure such as Verizon's proposal, it requires a Zoning Modification Request. The Round Hill Water Tank is currently labeled a non-conforming structure and any increase in height would increase its degree of non-conformity.
- Structural – Any co-locations beyond two (2) could not run their coaxial cable down the interior access tube. It would have been to run on the exterior of the water tank, thus increasing the visual impact. In addition, any co-locations beyond two (2) would require the mounts and the cable to be welded directly to the tank, thereby increasing the risk for damage to the interior and exterior coating of the tank and requiring the tank to be emptied while welding is performed.
- Co-location Lease – The Town of Round Hill will only sign a four (4) years and eleven (11) months lease, which is a very short lease term that is virtually unheard of in the industry. This lease term would significantly diminish any carrier's desires to co-locate on the water tank.

In addition, due to potential structural damage and visual impact issues, it is the opinion of this Consultant that Loudoun County only gives consideration to two (2) co-locations total for the Round Hill Water Tank. In other words, if Verizon's proposal to co-locate on the water tank is approved, then only one (1) more (future) co-location application should be considered.

3.0 RECOMMENDATIONS

It is the opinion of this Consultant that this proposed tower application should be denied, since a 110% setback from the nearest property line, as well as, a 750' setback from a nearest residence can not be accomplished and the opportunity for co-location on the Round Hill Water Tank exists.

However, if the County chooses to approve this application it is therefore the recommendation of this Consultant that the County consider the Applicant's proposal contingent upon the following criteria being submitted for review prior to final approval:

- Structural drawings of the tower;
- Grounding specifications;
- Certified RF Analysis Report.

In closing, this consultant remains available to address any comments or questions which may arise after review of this report. Any interested party with such comments or questions may feel free to contact this firm, which remains committed to delivering independent, objective, unbiased, and thorough consulting services.

Respectfully submitted,

George N. Condyles IV

George N. Condyles, IV
President & COO



Approximate Location of Tower Location



Center Line of access road with Round Hill School on Background



Property Line Between two Property Owners –Trees approximately 70’ AGL.



View from Proposed Tower Site



Mature Trees to be removed from Erection of Tower



East View from Property Owner's Landscaping Operation.

Notice existing VHF Tower for two way radio. AGL @40'



Electrical Transformers for Water Tank and possibly tower service



View from Neighborhood of water tank and tower.



North View of Water Tank



Historic Stone walls from 18th Century



Antenna Structure Registration

[FCC](#) > [WTB](#) > [ASR](#) > [Online Systems](#) > TOWAIR[FCC Site Map](#)

TOWAIR Determination Results

[? HELP](#)[New Search](#) [Printable Page](#)

*** NOTICE ***

TOWAIR's findings are not definitive or binding, and we cannot guarantee that the data in TOWAIR are fully current and accurate. In some instances, TOWAIR may yield results that differ from application of the criteria set out in 47 C.F.R. Section 17.7 and 14 C.F.R. Section 77.13. A positive finding by TOWAIR recommending notification should be given considerable weight. On the other hand, a finding by TOWAIR recommending either for or against notification is not conclusive. It is the responsibility of each ASR participant to exercise due diligence to determine if it must coordinate its structure with the FAA. TOWAIR is only one tool designed to assist ASR participants in exercising this due diligence, and further investigation may be necessary to determine if FAA coordination is appropriate.

DETERMINATION Results

Structure does not require registration. There are no airports within 8 kilometers (5 miles) of the coordinates you provided.

Your Specifications

NAD83 Coordinates

Latitude	39-08-37.0 north
Longitude	077-45-34.4 west

Measurements (Meters)

Overall Structure Height (AGL)	47.5
Support Structure Height (AGL)	45.7
Site Elevation (AMSL)	173.1

Structure Type

TOWER - Free standing or Guyed Structure used for Communications Purposes

Tower Construction Notification

Notify Tribes and Historic Preservation Officers of your plans to build a tower.

Note: Notification does NOT replace [Section 106 Consultation](#).

ASR Help	ASR License Glossary - FAQ - Online Help - Documentation - Technical Support
ASR Online Systems	TOWAIR - CORES - ASR Online Filing - Application Search - Registration Search
About ASR	Privacy Statement - About ASR - ASR Home

baxter consultants, inc.

**25915 Kirkwood Square
South Riding, Virginia 20152-2089
(703) 403-1655**

April 15, 2007

Community Wireless Structures
7700 Leesburg Pike, Suite 125
Falls Church, Virginia 22043

Attn: Mr. Thomas A. Murray

Re: National Environmental Policy Act (NEPA) Evaluation
CWS – Roundhill Telecommunications Site #114
Loudoun County, Virginia

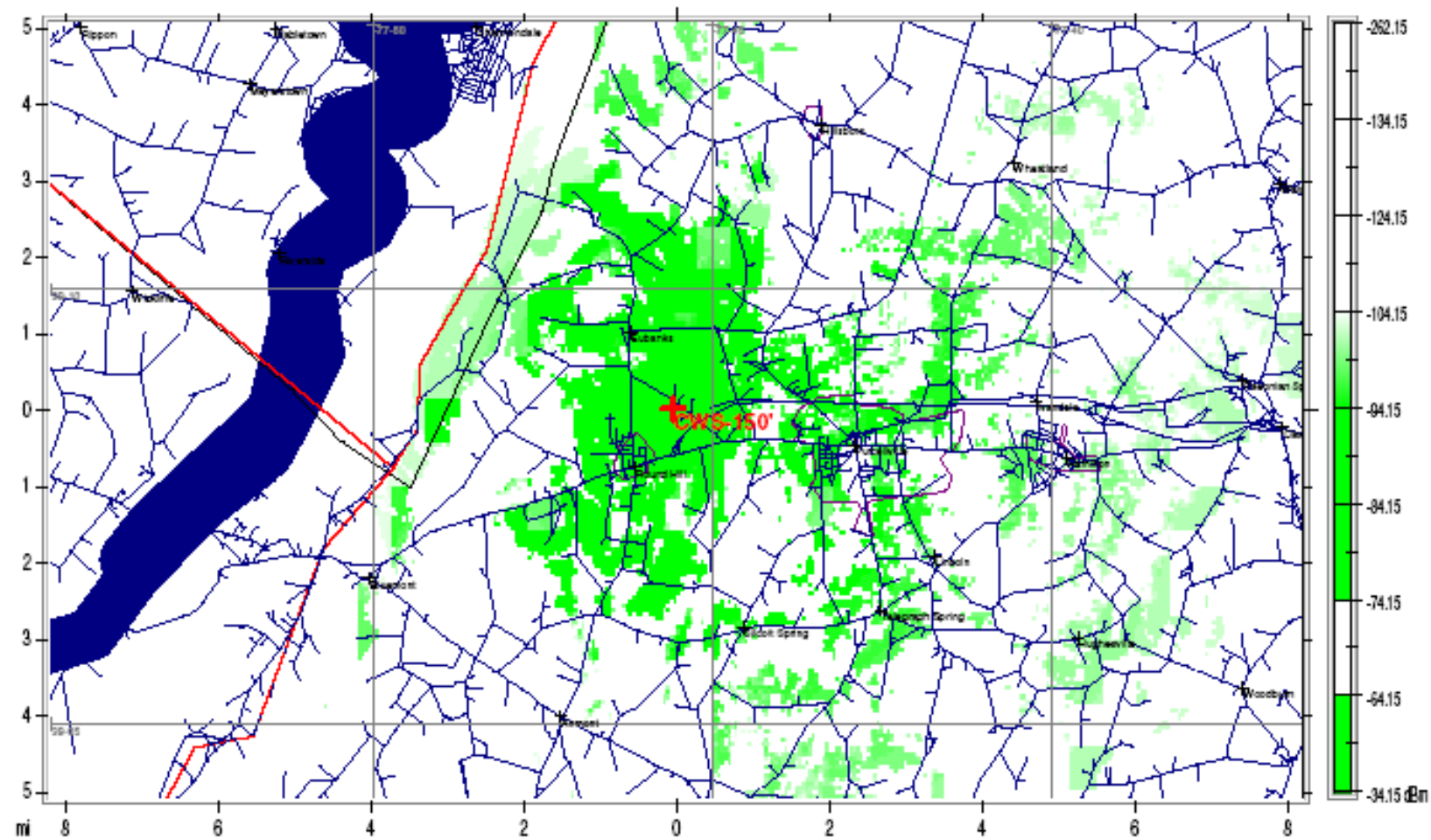
Dear Mr. Murray:

Baxter Consultants, Inc. (BCI) has conducted an evaluation of the above-referenced, proposed Community Wireless Structures (CWS) telecommunications development with regard to the Federal Communications Commission (FCC) guidelines of implementing the National Environmental Policy Act (NEPA). Specifically, these NEPA guidelines are defined in Title 47 of the Code of Federal Regulations (CFR) Sections 1.1301 through 1.1319.

The NEPA evaluation consisted of a site reconnaissance to verify the location of the proposed fenced telecommunications tower site and existing site features; review of *The National Map* provided by the United States (US) Department of Interior-US Geological Survey and contains regarding officially designated wilderness and wildlife preserves; consultation with the United States Army Corps of Engineers (USACE); review of the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) for Loudoun County, Virginia; review by the Virginia Department of Historic Resources (VDHR), which is the Virginia State Historic Preservation Office (SHPO) of potential impacts to historic properties/districts in the site vicinity; written requests to the Commonwealth of Virginia Department of Game and Inland Fisheries (VDGIF) and to the Commonwealth of Virginia Department of Conservation and Recreation (VDCR); and notification of the proposed tower construction via FCC's Tower Construction Notification System (TCNS).

BCI understands that Community Wireless Structures (CWS) proposes to construct an approximate 150-foot tall monopole-type telecommunications tower within an approximate 4,800-square-foot gravel-covered fenced compound at 36055 Bell Road (Rt 720). The proposed tower site is located on the south side of Bell Road approximately 3,700 feet southeast from its intersection with Woodgrove Road/Main Street (Rt 710) in the Round Hill area of Loudoun County, Virginia. CWS plans to access the site by constructing a gravel-covered access road. This proposed telecommunications facility is configured to accommodate the collocation of up to six wireless carriers. A *Site Location Map* is attached to this evaluation as *Figure 1*.

ROUND HILL, LOUDOUN COUNTY, VIRGINIA



CWS-150' AGL